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Xylosma craynii (Salicaceae), a new and restricted species for Queensland's Wet Tropics Bioregion

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Abstract

Xylosma craynii W.E.Cooper is newly described from the Wet Tropics bioregion of north-eastern Queensland. The new species is illustrated and notes on habitat and distribution are provided.

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Introduction

Xylosma G.Forst. has previously been classified within the family Flacourtiaceae Rich. ex DC. Recent molecular work has shown *Xylosma* to belong to the willow family Salicaceae Mirb. Chase *et al.* (2002). According to Christenhusz *et al.* (2017) the genus *Xylosma* comprises about 85 species occurring in South East Asia, Malesia, the Pacific, Australia and America.

Jessup (1984) revised *Xylosma* in Australia and recognised four species, with *X. ovata* Benth. and *X. terraereginae* C.T.White & Sleumer occurring in Qld and NSW (Jessup 1982) and *X. maidenii* Sleumer and *X. parvifolia* Jessup being endemic to Lord Howe Island. Specimens of a previously undescribed taxon have been collected since that revision and with this publication there are now five *Xylosma* species described from Australia.

The new *Xylosma* described herein was first collected by G. Sankowsky in 1985. *Xylosma craynii* W.E.Cooper *sp. nov.* flowers and fruits during the prolonged wet season typical of the mountain rainforests in the tropics, making access to the plants difficult. However, in recent years collections of fertile material of both sexes have been successful.

The specific delimination of this rather large genus is very difficult, as neither flowers nor fruits yield good or distinctive characters. However, the differences, though small, or even minute, seem to hold (Sleumer 1954:66). Malesian *Xylosma* species as revised by Sleumer (1954) possess some features which differ variously from all Australian species. Australian specimens lack spines, have stipules, a rudimentary ovary is sometimes present in male flowers, and the disk may be 7–18-lobed rather than 4–8-lobed. Features that are consistent with previously published *Xylosma* descriptions include articulate pedicels, imbricate sepals, the lack of petals, a glandular disk, flowers seemingly perfect in some specimens, a rudimentary ovary present in some flowers within each inflorescence, a berry that is fleshy not dry, and seeds usually few to 12 (with the exception of *X. craynii*, which has approximately 40 seeds per fruit).

Methods

This study is based on the examination of herbarium material from CNS and BRI combined with field observa-

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tions. Measurements of floral parts and fruits are based on freshly collected specimens and material preserved in 70% ethanol.

Taxonomy

Xylosma craynii W.E.Cooper *sp. nov.*

Figures 1, 2 & 3.

Type: Australia, Queensland. Cook District: Mt Lewis, *c.* 500 m beyond the hut, 1st May 2021, *W. Cooper 2752 + R. Jensen* (holo: CNS 152583, iso: BRI, CANB, MO, L, K, SING).

Flacourtiaceae sp. (=GS/517), Christophel & Hyland (1993: 7, 32, 115, pl. 53(c); Hyland & Whiffin (1993a: system1, 108, 119, 165); Hyland & Whiffin (1993b: system 2, 165)

Xylosma sp. 1 (Mt. Lewis), Briggs & Leigh (1988: 44, 181)

Xylosma sp. 1 (Mt. Lewis; G.Sankowsky 502), Briggs & Leigh (1996: 70)

Xylosma sp. (Mt Lewis), Cooper & Cooper (2004: 221)

Xylosma sp. (Mt Lewis G.S.1108), Hyland *et al.* in Cooper & Cooper (1994: 305)

Xylosma sp. (Mt Lewis G.Sankowsky+ 1108), Jessup (1994: 140); Jessup (1997: 90); Jessup (2002: 87); Jessup (2007: 85); Jessup (2010: 80); Jessup (2013); Jessup & Halford (2016: 74)

Xylosma sp. Mt Lewis (G.Sankowsky+ 1108), CHAH (2006); CHAH (2021)

Xylosma sp. 'Mt Lewis' (G.Sankowsky 502), Thomas & McDonald (1987); Thomas & McDonald (1989); Zich *et al.* (2020)

Small tree to 20 m, often multi-stemmed, evergreen, dbh to 30 cm, dioecious; buttresses and thorns absent; bark grey, somewhat rough with numerous vertical fissures and lenticels; twigs with pale lenticels; stipules persistent, triangular, *c*. 0.5 mm long and wide, glabrous. **Leaves** simple, alternate, distichous; petioles 6–9 mm long, channeled, glabrous; blades discolourous, ovate or ovate-elliptic, 72–140 mm long × 33–58 mm wide, glabrous; base cuneate; apex acuminate; margin toothed, with each tooth gland-tipped; basal pair of glands *c*. 0.25 mm diameter, the remaining glands smaller; venation camptodromous proximally and brochidodromous distally, the primary vein flush in dried specimens, the lateral veins in 6–8 pairs diverging from primary vein at 50–60º, the tertiary venation reticulate. **Male inflorescence** an axillary raceme or a cluster of racemes, each raceme to 16-flowered; bracts mostly persistent at peduncle base, broadly ovate to almost orbicular, 1–1.7 mm long × 0.8–1.3 mm wide, puberulent; peduncle *c*. 1.5 mm long, minutely puberulent, green or red; articulation swollen; bracteoles at pedicel articulation caducous, ovate or oblong, 1.5–1.75 mm long × *c.*1.25 mm wide, ciliate; pedicel 3–5.5 mm long, minutely puberulent; sepals 5 or 6, imbricate-quincuncial, broadly ovate, *c*. 3 mm long × 2 mm wide, sparsely puberulent abaxially and puberulent adaxially, green, often with reddish bases; disk 15–18-lobed, orange; stamens *c*. 40, filaments *c*. 4 mm long; anthers basifixed, subglobose, *c*. 0.6 mm long × 0.9 mm wide, glabrous; rudimentary ovary sometimes present, urn-shaped, *c*. 0.5 mm long. **Female inflorescence** an axillary raceme or a cluster of racemes, each raceme to 10-flowered; bracts mostly persistent and clustered at peduncle base, imbricate, broadly ovate to almost orbicular, 1–1.5 mm long × 0.8–1.3 mm wide, green or red, puberulent abaxially and glabrous adaxially; apex acute, rounded or truncate; margin ciliate; peduncles 1–2.5 mm long, articulate, puberulent; bracteoles at pedicel articulation caducous, ovate or oblong, 1.5–1.75 mm long × *c.* 1.25 mm wide, ciliate, puberulent both abaxially and adaxially; pedicel articulated, puberulent, 3–5 mm long, green or red; sepals imbricate-quincuncial, suborbicular or broadly ovate, concave and remaining cupped at anthesis, *c*. 2.5 mm long × 2 mm wide, abaxially mostly glabrous and puberulent towards apex, adaxially pubescent, green with red bases, apex obtuse or acute, margin ciliate; petals absent; disk fleshy, 12–14-lobed, bright orange, forming a ring protruding beyond the ovary diameter; ovary superior, sessile, ovoid, 1-locular, *c*. 2.25 mm long × 2 mm wide, green; style *c*. 0.5 mm long, 3–5-branched; stigmas 3–5, lobed; placentas 4; ovules *c*. 40. **Fruit peduncle** 3–6 mm long. **Fruit** a globose berry, *c*. 9 mm long × 9.5 mm wide, bright red to blackish, with sepals persistent at base and stigmas persistent at apex; seeds *c*. 40; testa brown.

Specimens examined. SFR 143 Parish of Kanawarra, Carbine Logging Area, *Gray 4895*, July 1988 (CNS); Mt Lewis, just beyond hut, Oct 2606, *Cooper 2606*, *Jensen* & *Hawkes* (CNS); Mt Lewis, Sep 1985, *Sankowsky 426* (CNS); Mt Lewis, June 1986, *Sankowsky 484* (CNS); Mt Lewis, March 1987, *Sankowsky 606* (CNS); Mt Lewis, Carbine LA, Sep 1986, *Sankowsky 517* (CNS); Mt Lewis, March 1987, *Sankowsky 607* (CNS); Mt Lewis, Carbine LA, Sep 1986, *Sankowsky 517* (CNS); 30.1 km from the Rex Highway, Mt Lewis Road, Nov 1988, *Jessup 887* & *Guymer* (CNS); Small creek with causeway *ca*. 25.5km along Mt. Lewis Road from Julatten to Mossman Road, May 2017, *Jensen 3853, Hawkes, McKenna & Cooper* (BRI); Mt Lewis, *ca*. 150 m along old road from parking area at summit, July 2008, *Zich 625* (CNS).

Illustrations. Christophel & Hyland (1993:115) as Flacourtiaceae sp. GS/517; Cooper & Cooper (2004:221) as *Xylosma* sp. (Mt Lewis); Zich *et al*. (2020), as *Xylosma* sp. Mt Lewis (*G.Sankowsky* 1108).

Diagnostic features. Similar to *Xylosma congesta* (Loureiro) Merrill but differs from that species by the absence of spines on young branches (v. present); stipules triangular (v. subulate); petiole 6–9 mm long (v. 2–5 mm); leaves with 6–8 pairs of lateral veins (v. 3–5); ovary placentas 4 (v. 2); ovules *c*. 40 (v. 2 or 3); styles usually 3–5-branched (v. 2-branched); seeds about 40 (v. 2 or 3).

Phenology. Flowers have been recorded in March and May, and fruit in September and November.

Figure 1. *Xylosma craynii,* bark, (*Cooper 2752 & Jensen* CNS). Photo: W. Cooper

Distribution & habitat. *Xylosma craynii* has a restricted distribution within complex notophyll vine forest on the Carbine Tableland (Mt Lewis & Mt Spurgeon) at altitudes from 1000 to 1200 m. It co-occurs with *Cardwellia sublimis* F.Muell., *Carnarvonia araliifolia* var. *montana* B.Hyland, *Casearia costulata* Jessup, *Placospermum coriaceum* C.T.White & W.D.Francis and *Pullea stutzeri* (F.Muell.) Gibbs.

Etymology. The specific epithet *craynii* honours Professor Darren Michael Crayn (1969–) in appreciation of his endless generosity to all under his tutelage at the Australian Tropical Herbarium (ATH). Darren has become

Figure 2. *Xylosma craynii,* female inflorescence showing articulated pedicels, tepals, orange lobed disk, ovaries, branched styles and lobed stigmas, (*Cooper 2752 & Jensen* CNS). Photo: R. Jensen

a champion of mountain top plants in the Wet Tropics bioregion so it seems appropriate that this high-altitude species will carry his name.

Notes. *Xylosma congesta* (Loureiro) Merrill, which occurs in India, China, Taiwan, Japan and Korea, is more similar to *X. craynii* than any other Australian species and has therefore been used for comparison in the diagnosis of the new species. *X. craynii* is unusual in the number of ovules and seeds (*c.* 40) compared with other *Xylosma* species, which have up to 12.

Conservation status. There are no immediate threats evident for the species. Using GeoCat (Bachman et al 2011) based on known locations, Extent of Occurrence is estimated at 27 km^2, and Area of Occupancy is estimated at 32 km^2. A suggested conservation status for *Xylosma craynii* is Endangered [ENB1ab(i, iii)+B2ab(i, iii)] (IUCN 2012).

Notes on typification. There are two herbarium sheets and one spirit sample of *W. Cooper 2752* + *R. Jensen* held at CNS, all clearly labelled as being parts of a single specimen. They thus constitute holotype material rather than being duplicates (see ICN Art. 8.3; Turland *et al.* 2018).

Disclosures

There are no disclosures or conflicts of interest to be declared.

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Figure 3. *Xylosma craynii,* infructescence showing articulated pedicels, persistent tepals and ripe fruit (*Cooper 2606 Jensen & Hawkes* CNS). Photo: R. Jensen

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